

CLAIMS

1. A method for detecting replication of severe acute respiratory syndrome coronavirus (SARS-coronavirus) in a sample, comprising detecting the presence SARS-coronavirus subgenomic RNA in said sample by reverse transcriptase polymerase chain reaction (PCR).

2. The method of Claim 1, wherein said subgenomic RNA comprises at least a portion of a leader sequence.

3. The method of Claim 1, further comprising detecting SARS-coronavirus genomic RNA.

4. The method of Claim 1, further comprising detecting SARS-coronavirus polypeptide.

5. The method of Claim 1, further comprising detecting SARS-coronavirus particles.

6. A method for detecting the presence of severe acute respiratory syndrome coronavirus (SARS-coronavirus) in a sample, comprising:

a) providing:

(i) a sample; and

(ii) cells chosen from HEK-293T, Huh-7, Mv1Lu, and pRHK;

b) inoculating said cells with said sample to produce inoculated cells; and

c) detecting the presence of said SARS-coronavirus in said inoculated cells.

7. The method of Claim 7, wherein said detecting comprises detecting the presence of subgenomic RNA.

5 8. The method of Claim 6, wherein said detecting comprises detecting the presence of SARS-coronavirus genomic RNA.

9. The method of Claim 6, wherein said detecting comprises detecting the presence of a SARS-coronavirus polypeptide.

10 10. The method of Claim 6, wherein said cells comprise a transgenic cell.

11. The method of Claim 10, wherein said transgenic cell comprises a transgenic mink lung epithelial cell line expressing human furin, wherein said cell line has a property chosen from (a) increased sensitivity to at least one virus selected from the group consisting of influenza A virus, influenza B virus and parainfluenza virus 3, as compared to Mv1Lu, and (b) enhanced productivity of infectious virions upon inoculation with a virus chosen from influenza A virus, influenza B virus and parainfluenza virus 3, as compared to Mv1Lu.

20 12. The method of Claim 6, wherein said cells comprise a wild type cell.

13. The method of Claim 6, wherein said cells are in single cell type culture.

25 14. The method of Claim 6, wherein said cells are in mixed cell type culture with a second cell type.

15. The method of Claim 6, wherein said cells are frozen *in situ*

5 16. The method of Claim 6, wherein said sample is isolated from a mammal.

17. The method of Claim 6, wherein said mammal is human.

10 18. A method for detecting the presence of severe acute respiratory syndrome coronavirus (SARS-coronavirus) in a first sample and in a second sample, comprising:

a) providing:

(i) a first sample;

(ii) a second sample;

15 b) contacting test cells chosen from HEK-293T, Huh-7, Mv1Lu, and pRHK with:

(i) said first sample to produce a first treated sample; and

(ii) said second sample to produce a second treated sample;

20 wherein said contacting is such that said test cells are infected with SARS-coronavirus;

c) detecting the presence of SARS-coronavirus genomic RNA and SARS-coronavirus subgenomic RNA in said first treated sample and said second treated sample, wherein said detecting indicates the presence of said SARS-coronavirus in said first treated sample and said second treated sample.

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19. The method of Claim 18, wherein said detecting comprises detecting an absence of SARS-coronavirus subgenomic RNA in said first treated sample.

20. The method of Claim 18, wherein said detecting comprises detecting a reduced level of SARS-coronavirus subgenomic RNA in said first treated sample compared to the level of subgenomic RNA in said second treated sample.

5 21. The method of Claim 18, wherein said detecting comprises detecting a reduced ratio of SARS-coronavirus subgenomic RNA level to SARS-coronavirus genomic RNA level in said first treated sample compared to said ratio in said second treated sample.

10 22. The method of Claim 18, wherein said first sample and said second sample are isolated from a mammal.

23. The method of Claim 18, wherein said mammal is human.

15 24. A method for identifying a test agent as altering replication of severe acute respiratory syndrome coronavirus (SARS-coronavirus) in a cell, comprising:
a) providing cells treated with a first test agent, wherein said cells are chosen from HEK-293T, Huh-7, Mv1Lu, and pRHMK; and
b) detecting an altered level of replication of SARS-coronavirus in cells
20 treated with said first test agent compared to a level of replication of SARS-coronavirus in cells not treated with said first test agent, wherein said detecting identifies said first test agent as altering replication of SARS-coronavirus in a cell.

25 25. The method of Claim 24, wherein said altered level is a reduced level.

26. The method of Claim 24, wherein said altered level is an increased

level.

27. The method of Claim 24, wherein said detecting comprises detecting SARS-coronavirus subgenomic RNA.

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28. The method of Claim 24, wherein said detecting comprises detecting SARS-coronavirus genomic RNA.

29. The method of Claim 24, wherein said detecting comprises detecting SARS-coronavirus polypeptide.

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30. The method of Claim 24, further comprising detecting SARS-coronavirus particles.

31. The method of Claim 24, wherein said detecting comprises detecting an absence of SARS-coronavirus genomic RNA in said cells treated with said first test agent.

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32. The method of Claim 24, wherein said detecting comprises detecting a reduced level of SARS-coronavirus subgenomic RNA in said cells treated with said first test agent compared to the level of SARS-coronavirus subgenomic RNA in said cells that are not treated with said first test agent.

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33. The method of Claim 32, wherein detecting an increased reduction in the level of SARS-coronavirus subgenomic RNA in said cells treated with said first test agent compared to said cells treated with said second test agent identifies said first test agent as more efficacious than said second test agent in reducing replication of

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SARS-coronavirus in a cell.

34. The method of Claim 24, wherein said detecting comprises detecting a reduced ratio of SARS-coronavirus subgenomic RNA level relative to SARS-coronavirus genomic RNA level in said cells treated with said first test agent compared to said ratio in said cells that are not treated with said first test agent.

35. The method of Claim 34, wherein detecting an increased reduction in said ratio of SARS-coronavirus subgenomic RNA level to SARS-coronavirus genomic RNA level in said cells treated with said first test agent compared to said ratio in said cells treated with said second test agent identifies said first test agent as more efficacious than said second test agent in reducing replication of SARS-coronavirus in a cell.

36. An antibody specific for one or more SARS-coronavirus antigen that is produced by a cell chosen from HEK-293T, Huh-7, Mv1Lu, and pRHMK.

37. The antibody of Claim 36, wherein said antibody comprises a polyclonal antibody.

38. The antibody of Claim 36, wherein said antibody comprises a monoclonal antibody.

39. The antibody of Claim 36, wherein said antibody comprises a humanized antibody.

40. A composition comprising (i) cells susceptible to a virus that is not a

plus-strand RNA virus, and (ii) protease inhibitor.

41. A method for detecting a virus that is not a plus-strand RNA virus in a sample, comprising:

- 5 a) providing:
- i) a sample;
 - ii) cells susceptible to said virus that is not a plus-strand RNA virus; and
 - iii) one or more protease inhibitor;
- 10 b) contacting said cells and said sample in the presence of said protease inhibitor to produce contacted cells, wherein replication of said virus that is not a plus-strand RNA virus in said contacted cells is not reduced relative to replication of said virus that is not a plus-strand RNA virus in cells not contacted with said protease inhibitor, and wherein
- 15 replication of a plus-strand RNA virus in said cells contacted with said protease inhibitor is reduced relative to replication of said plus-strand RNA virus in cells not contacted with said protease inhibitor.

42. The method of Claim 41, wherein said virus that is not a plus-strand RNA virus is chosen from influenza virus, parainfluenza virus, adenovirus, respiratory syncytial virus, and metapneumovirus.

43. The method of Claim 42, wherein said influenza virus is chosen from influenza A, influenza B, and influenza C.

44. The method of Claim 42, wherein said parainfluenza virus is chosen from parainfluenza 1, parainfluenza 2, parainfluenza 3, and parainfluenza 4.

45. The method of Claim 42, wherein said adenovirus is chosen from adenovirus 2, adenovirus 3, adenovirus 4, adenovirus 5, adenovirus 7, adenovirus 9, adenovirus 12, adenovirus 17, and adenovirus 40.

5 46. The method of Claim 41, wherein said plus-strand RNA virus is chosen from togavirus, flavivirus, coronavirus, and picornavirus.

47. The method of Claim 46, wherein said coronavirus comprises SARS-coronavirus.